

05/15/2008

CLAIMS

1. (Currently amended) A method of signal transmission in a communication system, comprising:

transmitting an optical beam through a modulator adapted to:

have a peak of light transmission at a first voltage;

substantially block light transmission at a second voltage greater than the first voltage; and

have another peak of light transmission at a third voltage greater than the second voltage; and

driving the modulator with an electrical signal having three or more levels, wherein:

a first level is outside of a voltage range between the first and third voltages, said voltage range including the first and third voltages;

a second level is either inside the voltage range between the first and third voltages or outside of said voltage range on the opposite side from the first level; and

a third level is inside said voltage range; and

generating the electrical signal based on a data stream, wherein each signal level corresponds to a different data value.

2. (Original) The method of claim 1, wherein the second level corresponds to the second voltage.

3. (Original) The method of claim 1, wherein light transmission corresponding to the first level is lower than a peak light transmission.

4. (Canceled)

5. (Previously presented) The method of claim 1, wherein:

the second level is inside the voltage range between the first and third voltages and is different from any one of the first, second, and third voltages.

6. (Previously presented) The method of claim 1, wherein the electrical signal is generated based on a duobinary data sequence and each of the first, second, and third levels corresponds to a different duobinary data value.

7. (Previously presented) The method of claim 1, wherein:

the first level is less than the first voltage; and

the second level is greater than the third voltage.

8. (Previously presented) The method of claim 7, wherein the voltage difference between the first voltage and the first level is different from the voltage difference between the third voltage and the second level.

9. (Previously presented) The method of claim 1, wherein a relative optical phase shift for the transmitted optical beam corresponding to the first and second levels is different than about 180 degrees.

10. (Original) The method of claim 1, wherein the first level is selected based on desired receiver sensitivity at a selected bit error rate.

11. (Original) The method of claim 1, wherein the first level is selected based on an eye diagram at a receiver of the communication system.

12. (Original) The method of claim 1, wherein the modulator is a Mach-Zehnder modulator and the communication system is a wavelength division multiplexing (WDM) communication system.

13. (Currently amended) The method of claim 1, wherein the difference between the first level and the first voltage exceeds 10% of the difference between the first and third voltages.

14. (Currently amended) A transmitter for a communication system, comprising:
a modulator configured to transmit light generated by a light source, wherein the modulator is adapted to:

have a peak of light transmission at a first voltage;
substantially block light transmission at a second voltage greater than the first voltage; and

have another peak of light transmission at a third voltage greater than the second voltage; and

a driver configured to drive the modulator with an electrical signal having three or more levels, wherein:

a first level is outside of a voltage range between the first and third voltages, said voltage range including the first and third voltages;

a second level is either inside the voltage range between the first and third voltages or outside of said voltage range on the opposite side from the first level; and

a third level is inside said voltage range; and

an encoder configured to convert an incoming data stream into an encoded data sequence, wherein the driver generates the electrical signal based on the encoded data sequence such that each signal level corresponds to a different data value of said sequence.

15. (Original) The transmitter of claim 14, further comprising the light source.

16. (Canceled)

17. (Currently amended) The transmitter of claim 14 [[16]], wherein the encoded data sequence is a duobinary data sequence.

18. (Currently amended) A communication system comprising a transmitter, wherein the transmitter includes:

a modulator configured to transmit light generated by a light source, wherein the modulator is adapted to:

have a peak of light transmission at a first voltage;
substantially block light transmission at a second voltage greater than the first voltage; and

have another peak of light transmission at a third voltage greater than the second voltage; and

a driver configured to drive the modulator with an electrical signal having three or more levels, wherein:

a first level is outside of a voltage range between the first and third voltages, said voltage range including the first and third voltages;

a second level is either inside the voltage range between the first and third voltages or outside of said voltage range on the opposite side from the first level; and

a third level is inside said voltage range; and

an encoder configured to convert an incoming data stream into an encoded data sequence, wherein the driver generates the electrical signal based on the encoded data sequence such that each signal level corresponds to a different data value of said sequence.

19. (Previously presented) The communication system of claim 18, further comprising a receiver configured to receive optical signals from the transmitter via a communication link, said link including a link element that is adapted to subject optical signals passing there through to bandpass filtering.

20. (Original) The communication system of claim 19, wherein the link element is an optical router and the communication system has multiple instances of the transmitter.

21-23. (Canceled)

24. (Currently amended) A method of signal transmission in a communication system, comprising:

transmitting an optical beam through a modulator adapted to:

have a peak of light transmission at a first voltage;

substantially block light transmission at a second voltage greater than the first voltage; and

have another peak of light transmission at a third voltage greater than the second voltage; and

driving the modulator with an electrical signal having ~~two~~ three or more levels, wherein:

a first level is outside of a voltage range between the first and third voltages;

a second level is inside the voltage range between the first and third voltages;

~~the two or more levels comprise~~ a third level is outside of the voltage range between the first and third voltages;

the first level is less than the first voltage; and

the third level is greater than the third voltage; and

the voltage difference between the first voltage and the first level is different from the voltage difference between the third voltage and the third level.

25. (Canceled)

26. (New) A method of signal transmission in a communication system, comprising:

transmitting an optical beam through a modulator adapted to:

have a peak of light transmission at a first voltage;

substantially block light transmission at a second voltage greater than the first voltage; and

have another peak of light transmission at a third voltage greater than the second voltage; and

driving the modulator with an electrical signal having three or more levels, wherein:

- a first level is outside of a voltage range between the first and third voltages, said voltage range including the first and third voltages;
- a second level is either inside the voltage range between the first and third voltages or outside of said voltage range on the opposite side from the first level;
- a third level is inside said voltage range; and

the difference between the first level and the first voltage exceeds 10% of the difference between the first and third voltages.